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Remarks

Reconsideration of the present application is requested in view of the amendment to the claims and the following remarks:

The 112 Rejection

In the outstanding non-final office action dated February 5, 2004, claim 1 was rejected under 35 U.S.C. 112 because the claim was directed to a chemical mixing system for preparing a slurry and the slurry was included as a positive limitation in the claim, while the preamble recited the system for preparing the slurry. Claim 1 has been amended to recite a chemical mixing system and slurry in the preamble to conform the preamble to the body of the claim. The recitation in the preamble that the slurry includes insoluble solids has been retained.

With this amendment to the claims, the 112 rejection has been overcome, and the rejection is respectfully requested to be withdrawn.

The 103 Rejection

Claims 1-5 and 7-13 were rejected under 35 U.S.C. 103(a) as unpatentable over Chan et al. 5,647,391 (Chan) in view of Lascombes 5,318,750 (Lascombes) and further in view of Leverenz et al. 3,710,811 (Loverenz).

The Cited References

The Office Action asserts that Chan discloses various device parts that include a conductivity probe and pump valves to regulate chemical components via a control and control signal. The Office Action acknowledges, however, that Chan fails to disclose "varying the rate of addition of the at least one chemical component," a first conductivity sensor for detecting the amount of chemical added to the mix volume vessel, a recirculation loop, or a conductivity probe in the recirculation loop. Some of these deficiencies of Chan are disclosed in the secondary references. For example, the Office Action asserts that Lascombes teaches a mix volume conduit connected to source components having solid particulate salt, a control system, conductivity sensors, and variable flow rate pumps to regulate the flow rate

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of chemical components via a control. The Office Action therefore states that it would be obvious to provide the device of Chan with a first sensor at each of the sources in connection with the control of Lascombes in order to control the additive amount of the source components in addition to monitoring the final mixed product in the mix vessel. The Office Action does acknowledge that Chan, even as modified by Lascombes, still does not disclose a recirculation loop, and a conductivity probe in the recirculation loop. In view of this deficiency, the Office Action asserts that Leverenz discloses a mix volume tank with a recirculation loop and a means to add additional source material in response to a concentration sensor so that it would be obvious to provide the mix vessel tank of Chan with a recirculation line connected back to the tank. Based on this analysis of the disclosures of the three cited references, the Office Action nevertheless still further acknowledges that the references do not discuss a measurement of insoluble solids by the conductivity sensors.

Response to the 103 Rejection

Applicant has previously addressed each of the cited references in a Supplemental Amendment that was submitted on August 18, 2003 and that was entered in the present application with the RCE filed October 17, 2003. Applicant respectfully traverses the rejection made in the outstanding Office Action and expressly incorporates the remarks presented in the Supplemental Amendment concerning these references.

Further, Applicant agrees with the statement in the Office Action at page 10 that the references do not discuss a measurement of insoluble solids by the conductivity sensors.

None of the references, alone or combined, teach or suggest a chemical mixing system that correlates conductivity to an insoluble solids content of a slurry. Specifically, none of Chan, Lascombes, or Leverenz or their combination teach or suggest Applicant's invention as presently claimed because these references do not teach or suggest measuring conductivity of a slurry and correlating the conductivity to a level of insoluble solids in the slurry. At most, all of the cited references report mixing various chemicals to form solutions. Accordingly, amended claim 1 and all claims depending from claim 1 are allowable.

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In addition, none of the references, either alone or combined, teach or suggest a control system for preparing a slurry where the control system has a first conductivity sensor to detect when a defined amount of the chemical components is added to the mix volume and a conductivity probe to detect when a combined amount of the chemical components has a desired insoluble solids content. Specifically, Chan reports a sensing arrangement that detects the addition of reactants each time they are added to the solution and a controller that dispenses predetermined amounts of reactant each time the reactant is added. (Chan at col. 5, lines 15-24). This report does not teach or suggest a control system to provide a slurry having a desired insoluble solids content.

Similarly, Lascombes reports a first measurement means to determine a concentration of an aqueous solution before various solutions are mixed. A second measurement in Lascombes is located downstream of a dialysis circuit that provides a measurement after the mixture has been used in a dialysis procedure. No measurement of the concentration of the mixture of the various aqueous solutions is taken. (Lascombes at col. 3, lines 18-22 and col. 3, lines 46-50). Again, this report does not teach or suggest a control system to provide a slurry having a desired insoluble solids content.

Further, Leverenz only reports establishing and maintaining the pre-selected salinity of a solution using a pair of conductivity probes used to measure the conductivity of a mixed solution, not a slurry (Leverenz at col. 3, lines 58-60).

The admitted lack of this recited claim feature in the cited references demonstrates that the Office Action fails to make a *prima facie* case of unpatentability because there is no teaching or suggestion of the recited claim feature. Applicant submits that the present claims are patentable over the cited references because these references do not teach or suggest a mixing system that measures conductivity of a slurry and stopping the addition of at least one chemical component when the measured conductivity equals a reference conductivity corresponding to a desired insoluble solids content. Applicant respectfully requests withdrawal of the rejection.

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Applicant also traverses the assertion that there is only "intended use" made of the conductivity data. Claim 1 has been amended herein to more clearly point out and distinctly recite that aspect of the claimed invention wherein the chemical mixing system ceases addition of the at least one chemical component when the slurry has a measured conductivity equal to a reference conductivity that corresponds to a desired insoluble solids content. The correlated value of conductivity corresponding to a desired insoluble solids content is a positive limitation of the claim, not merely a "desired" or "intended" use.

Applicant further submits that the cases noted in the Office Action are not determinative in the present case. In re Casey, 152 USPQ 235, was cited in the Office Action for the proposition that the manner or method in which a machine is utilized is not germane to the issue of patentability of the machine itself. In re Casey can be distinguished from the present application in that the direct, specific and unique operation of the mixing system is expressly recited in the pending claims, while in Casey the CCPA found that there was no difference between the reference cited and the applicant's tape dispensing machine, i.e., that both the reference and Casey's tape dispensing machine operated identically.

Ex parte Thibault, 164 USPQ 667, was cited in the Office Action for the proposition that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." This case can be distinguished because more than "intended operation" is claimed in the instant application. The actual operation relating conductivity to correlated insoluble solids content is expressly recited, not just some "intended" operational result.

Ex parte Masham, 2 USPQ2d 1647, also cited in the Office Action, considered the recitation of material "intended to be worked upon" but goes no further and is thus no more applicable than Ex parte Thibault.

In re Application of Howard E. Young, 25 USPQ 69, was cited in the Office Action for the proposition that "a claim to a machine for making concrete beams included a limitation to the concrete reinforced members made by the machine as well as the structural

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elements of the machine itself. The court stated that the inclusion of the article formed within the body of the claim did not, without more, make the claim patentable." In the instant application, Young is distinguishable because there is more than merely a recitation of the slurry made by the mixing system in the pending claims that clearly recite correlating a measured conductivity with the insoluble solids content of the slurry.

For the reasons set out above, Applicant requests that the rejection under 35 U.S.C. 103(a) be withdrawn.


Conclusion

In view of the foregoing, Applicant submits that all of the rejections of the pending claims have been overcome and respectfully requests a notice of allowance.

Respectfully Submitted,

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